



SEQUENCE LISTING

<110> SATO, Makoto
NAGANO, Takashi

<120> Proteins with functions to regulate cell-migration and
cell-death

<130> 671302-2005

<140> 10/788, 793

<141> 2004-02-27

<150> PCT/JP02/07676

<151> 2002-07-29

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<151> 2001-8-27

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<170> PatentIn Ver. 2.1

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Lys Leu Val Gly Leu Ser Gln Arg Ile Glu Glu Leu Glu Glu Thr Asn	
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Asp Leu Leu Lys Lys Arg Leu Asp Gly Ile Glu Glu Val Glu Arg Glu
595 600 605

Ile Asn Arg Gly Arg Ser Cys Lys Gly Ser Glu Phe Thr Cys Pro Glu
610 615 620

Asp Asn Lys Ile Arg Glu Leu Thr Leu Glu Ile Glu Arg Leu Lys Lys
625 630 635 640

Arg Leu Gln Gln Leu Glu Val Val Glu Gly Asp Leu Met Lys Thr Glu
645 650 655

Asp Glu Tyr Asp Gln Leu Glu Gln Lys Phe Arg Thr Glu Gln Asp Lys
660 665 670

Ala Asn Phe Leu Ser Gln Gln Leu Glu Glu Ile Lys His Gln Met Ala
675 680 685

Lys His Lys Ala Ile Glu Lys Gly Glu Ala Val Ser Gln Glu Ala Glu
690 695 700

Leu Arg His Arg Phe Arg Leu Glu Glu Ala Lys Ser Arg Asp Leu Gln
705 710 715 720

Ala Glu Val Gln Ala Leu Lys Glu Lys Ile His Glu Leu Met Asn Lys
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Glu Asp Gln Leu Ser Gln Leu Gln Val Asp Tyr Ser Val Leu Gln Gln
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Arg Phe Met Glu Glu Glu Thr Lys Asn Lys Asn Met Gly Arg Glu Val
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Leu Asn Leu Thr Lys Glu Leu Glu Leu Ser Lys Arg Tyr Ser Arg Ala
770 775 780

Leu Arg Pro Ser Gly Asn Gly Arg Arg Met Val Asp Val Pro Val Ala
785 790 795 800

Ser Thr Gly Val Gln Thr Glu Ala Val Cys Gly Asp Ala Ala Glu Glu
805 810 815

Glu Thr Pro Ala Val Phe Ile Arg Lys Ser Phe Gln Glu Glu Asn His
820 825 830

Ile Met Ser Asn Leu Arg Gln Val Gly Leu Lys Lys Pro Met Glu Arg
835 840 845

Ser Ser Val Leu Asp Arg Tyr Pro Pro Ala Ala Asn Glu Leu Thr Met

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Arg Lys Ser Trp Ile Pro Trp Met Arg Lys Arg Glu Asn Gly Pro Ser				
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Thr Pro Gln Glu Lys Gly Pro Arg Pro Asn Gln Gly Ala Gly His Pro				
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Gly Glu Leu Val Leu Ala Pro Lys Gln Gly Gln Pro Leu His Ile Arg				
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Val Thr Pro Asp His Glu Asn Ser Thr Ala Thr Leu Glu Ile Thr Ser				
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Pro Thr Ser Glu Glu Phe Phe Ser Ser Thr Thr Val Ile Pro Thr Leu				
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Gly Asn Gln Lys Pro Arg Ile Thr Ile Ile Pro Ser Pro Asn Val Met				
945		950		955
Ser Gln Lys Pro Lys Ser Ala Asp Pro Thr Leu Gly Pro Glu Arg Ala				
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Met Ser Pro Val Thr Ile Thr Thr Ile Ser Arg Glu Lys Ser Pro Glu				
	980		985	990
Gly Gly Arg Ser Ala Phe Ala Asp Arg Pro Ala Ser Pro Ile Gln Ile				
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Met Thr Val Ser Thr Ser Ala Ala Pro Thr Glu Ile Ala Val Ser Pro				
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Glu Ser Gln Glu Val Pro Met Gly Arg Thr Ile Leu Lys Val Thr Pro				
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Glu Lys Gln Thr Val Pro Ala Pro Val Arg Lys Tyr Asn Ser Asn Ala				
	1045		1050	1055
Asn Ile Ile Thr Thr Glu Asp Asn Lys Ile His Ile His Leu Gly Ser				
	1060		1065	1070
Gln Phe Lys Arg Ser Pro Gly Pro Ala Ala Glu Gly Val Ser Pro Val				
	1075		1080	1085

Ile Thr Val Arg Pro Val Asn Val Thr Ala Glu Lys Glu Val Ser Thr
1090 1095 1100

Gly Thr Val Leu Arg Ser Pro Arg Asn His Leu Ser Ser Arg Pro Gly
1105 1110 1115 1120

Ala Ser Lys Val Thr Ser Thr Ile Thr Ile Thr Pro Val Thr Thr Ser
1125 1130 1135

Ser Thr Arg Gly Thr Gln Ser Val Ser Gly Gln Asp Gly Ser Ser Gln
1140 1145 1150

Arg Pro Thr Pro Thr Arg Ile Pro Met Ser Lys Gly Met Lys Ala Gly
1155 1160 1165

Lys Pro Val Val Ala Ala Ser Gly Ala Gly Asn Leu Thr Lys Phe Gln
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ggttgaaaaa gctccttgaa caagaaaaag cttaccaagc ccgcaaagaa aaggaaaacg 180
ctaagcggct caacaaactt cgagatgagc ttgtgaagct caagtccttc gccctc atg 239
Met

ttg gtg gac gag agg cag atg cac atc gag caa ctg ggc ctg cag agt	287
Leu Val Asp Glu Arg Gln Met His Ile Glu Gln Leu Gly Leu Gln Ser	
5 10 15	
cag aaa gtc cag gac ctc act cag aag ctg agg gag gag gaa gaa aaa	335
Gln Lys Val Gln Asp Leu Thr Gln Lys Leu Arg Glu Glu Glu Glu Lys	
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ctc aaa gcg gtc act tac aaa tcc aag gaa gac cgc cag aag ctg ctc	383
Leu Lys Ala Val Thr Tyr Lys Ser Lys Glu Asp Arg Gln Lys Leu Leu	
35 40 45	
aag tta gaa gtg gac ttc gaa cac aag gcc tcg agg ttt tcc cag gag	431
Lys Leu Glu Val Asp Phe Glu His Lys Ala Ser Arg Phe Ser Gln Glu	
50 55 60 65	
cac gaa gag atg aac gcc aaa ttg gcg aat caa gaa tct cac aac cgg	479
His Glu Glu Met Asn Ala Lys Leu Ala Asn Gln Glu Ser His Asn Arg	
70 75 80	
caa ctt cga ctc aaa ctg gtt ggc tta tcg caa agg att gag gag ctg	527
Gln Leu Arg Leu Lys Leu Val Gly Leu Ser Gln Arg Ile Glu Glu Leu	
85 90 95	
gaa gag acc aat aaa agc ctt cag aag gca gag gaa gag ctc cag gag	575
Glu Glu Thr Asn Lys Ser Leu Gln Lys Ala Glu Glu Glu Leu Gln Glu	
100 105 110	
ctg aga gag aaa att gcc aaa ggg gaa tgt gga aac tcc agt ctc atg	623
Leu Arg Glu Lys Ile Ala Lys Gly Glu Cys Gly Asn Ser Ser Leu Met	
115 120 125	
gcg gaa gtg gag agt ctg cgc aag cgc gtg ctt gag atg gag ggc aag	671
Ala Glu Val Glu Ser Leu Arg Lys Arg Val Leu Glu Met Glu Gly Lys	
130 135 140 145	
gat gaa gag atc acg aag acc gag gcc cag tgc cgg gag ctg aag aag	719
Asp Glu Glu Ile Thr Lys Thr Glu Ala Gln Cys Arg Glu Leu Lys Lys	
150 155 160	
aag ctc caa gag gaa gaa cac cac agc aag gaa ctt aga cta gaa gtg	767
Lys Leu Gln Glu Glu Glu His His Ser Lys Glu Leu Arg Leu Glu Val	

165	170	175	
gag aag ctg cag aag agg atg tct	gag ctg gag aag ctg gag gaa gcg	815	
Glu Lys Leu Gln Lys Arg Met Ser	Glu Leu Glu Lys Leu Glu Glu Ala		
180	185	190	
ttc agc cgg agt aag tcg gaa tgc acc cag ctc cat ctg aac ctg gag	863		
Phe Ser Arg Ser Lys Ser Glu Cys Thr Gln Leu His Leu Asn Leu Glu			
195	200	205	
aag gag aag aac cta acc aaa gac ctg ctg aac gag ctg gag gtg gtc	911		
Lys Glu Lys Asn Leu Thr Lys Asp Leu Leu Asn Glu Leu Glu Val Val			
210	215	220	225
aag agt cga gtt aaa gaa ctc gaa tgc tcc gag agt aga ctg gag aag	959		
Lys Ser Arg Val Lys Glu Leu Glu Cys Ser Glu Ser Arg Leu Glu Lys			
230	235	240	
gcc gag tta agc ctc aaa gat gac ctt aca aag ctg aag tcc ttc act	1007		
Ala Glu Leu Ser Leu Lys Asp Asp Leu Thr Lys Leu Lys Ser Phe Thr			
245	250	255	
gtg atg ctg gtg gat gag agg aaa aat atg atg gag aaa ata aag caa	1055		
Val Met Leu Val Asp Glu Arg Lys Asn Met Met Glu Lys Ile Lys Gln			
260	265	270	
gaa gag agg aaa gtg gat ggg ttg aat aaa aac ttt aag gtg gag cag	1103		
Glu Glu Arg Lys Val Asp Gly Leu Asn Lys Asn Phe Lys Val Glu Gln			
275	280	285	
gga aaa gtc atg gat gtg acg gaa aag cta atc gag gaa agc aag aag	1151		
Gly Lys Val Met Asp Val Thr Glu Lys Leu Ile Glu Glu Ser Lys Lys			
290	295	300	305
ctt tta aaa ctc aaa tct gaa atg gag gaa aag gag tac agt ctg aca	1199		
Leu Leu Lys Leu Lys Ser Glu Met Glu Glu Lys Glu Tyr Ser Leu Thr			
310	315	320	
aag gag agg gat gag ctg atg ggt aaa ctg agg agc gaa gaa gaa agg	1247		
Lys Glu Arg Asp Glu Leu Met Gly Lys Leu Arg Ser Glu Glu Glu Arg			
325	330	335	
tcc tgt gaa ctg agc tgc agt gta gac tta cta aag aag cgg ctt gat	1295		
Ser Cys Glu Leu Ser Cys Ser Val Asp Leu Leu Lys Lys Arg Leu Asp			

340	345	350	
ggc ata gag gag gta gaa agg gaa ata aac cga ggt agg tcg tgc aag	1343		
Gly Ile Glu Glu Val Glu Arg Glu Ile Asn Arg Gly Arg Ser Cys Lys			
355	360	365	
ggg tct gag ttc acc tgc ccg gaa gac aat aag atc aga gaa cta acg	1391		
Gly Ser Glu Phe Thr Cys Pro Glu Asp Asn Lys Ile Arg Glu Leu Thr			
370	375	380	385
ctt gaa atc gag aga ctg aag aaa cgg ctc cag cag ttg gag gtg gtg	1439		
Leu Glu Ile Glu Arg Leu Lys Lys Arg Leu Gln Gln Leu Glu Val Val			
	390	395	400
gag ggg gac ttg atg aag acc gag gac gaa tat gac cag ttg gag cag	1487		
Glu Gly Asp Leu Met Lys Thr Glu Asp Glu Tyr Asp Gln Leu Glu Gln			
	405	410	415
aag ttc aga acc gag cag gat aag gca aac ttc ctc tcc cag cag ctc	1535		
Lys Phe Arg Thr Glu Gln Asp Lys Ala Asn Phe Leu Ser Gln Gln Leu			
	420	425	430
gag gaa atc aaa cac caa atg gcc aag cac aaa gcc ata gag aaa ggg	1583		
Glu Glu Ile Lys His Gln Met Ala Lys His Lys Ala Ile Glu Lys Gly			
	435	440	445
gag gcc gtg agc cag gaa gcc gaa ctg cga cac agg ttt cgg ctg gag	1631		
Glu Ala Val Ser Gln Glu Ala Glu Leu Arg His Arg Phe Arg Leu Glu			
	450	455	460
gag gct aaa agt cgt gat tta cag gcc gag gtg cag gct ctc aag gag	1679		
Glu Ala Lys Ser Arg Asp Leu Gln Ala Glu Val Gln Ala Leu Lys Glu			
	470	475	480
aag atc cac gag ctg atg aac aag gaa gac cag ctg tct cag ctc caa	1727		
Lys Ile His Glu Leu Met Asn Lys Glu Asp Gln Leu Ser Gln Leu Gln			
	485	490	495
gtc gac tat tcg gtc ctt cag caa aga ttt atg gaa gaa gaa act aag	1775		
Val Asp Tyr Ser Val Leu Gln Gln Arg Phe Met Glu Glu Glu Thr Lys			
	500	505	510
aac aag aac atg ggg agg gag gtc ctc aat ctg acc aag gag cta gag	1823		
Asn Lys Asn Met Gly Arg Glu Val Leu Asn Leu Thr Lys Glu Leu Glu			

515	520	525	
ctt tcc aag cgc tac agc cga gct ctc agg ccg agt ggg aac ggc cga			1871
Leu Ser Lys Arg Tyr Ser Arg Ala Leu Arg Pro Ser Gly Asn Gly Arg			
530	535	540	545
agg atg gtg gac gtg cct gtg gcc tcc act ggg gtg cag acc gag gcg			1919
Arg Met Val Asp Val Pro Val Ala Ser Thr Gly Val Gln Thr Glu Ala			
	550	555	560
gtg tgc ggg gat gct gcg gag gag gag acc ccg gct gtg ttc att cgc			1967
Val Cys Gly Asp Ala Ala Glu Glu Glu Thr Pro Ala Val Phe Ile Arg			
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aaa tcc ttc cag gag gaa aat cac atc atg agt aat ctt cga cag gta			2015
Lys Ser Phe Gln Glu Glu Asn His Ile Met Ser Asn Leu Arg Gln Val			
	580	585	590
ggc ctg aag aaa ccc atg gaa cgg tcc tcg gtc ctc gac agg tat ccc			2063
Gly Leu Lys Lys Pro Met Glu Arg Ser Ser Val Leu Asp Arg Tyr Pro			
	595	600	605
cca gca gcg aat gag ctc acc atg agg aag tct tgg att cct tgg atg			2111
Pro Ala Ala Asn Glu Leu Thr Met Arg Lys Ser Trp Ile Pro Trp Met			
610	615	620	625
aga aaa aga gaa aac ggt cct tcc act ccg cag gag aaa ggg ccc agg			2159
Arg Lys Arg Glu Asn Gly Pro Ser Thr Pro Gln Glu Lys Gly Pro Arg			
	630	635	640
cca aac cag ggt gca ggg cac ccc ggg gag ctg gtc cta gca cca aag			2207
Pro Asn Gln Gly Ala Gly His Pro Gly Glu Leu Val Leu Ala Pro Lys			
	645	650	655
cag ggc cag ccc cta cac atc cgt gtg aca cca gat cat gag aac agc			2255
Gln Gly Gln Pro Leu His Ile Arg Val Thr Pro Asp His Glu Asn Ser			
	660	665	670
act gcc acc ctg gag atc aca agc ccc aca tct gaa gag ttt ttc tct			2303
Thr Ala Thr Leu Glu Ile Thr Ser Pro Thr Ser Glu Glu Phe Phe Ser			
	675	680	685
agt acc acc gtc att cct acc tta ggc aac cag aaa cca aga ata acc			2351
Ser Thr Thr Val Ile Pro Thr Leu Gly Asn Gln Lys Pro Arg Ile Thr			

690	695	700	705	
att att cca tca ccc aat gtc atg tcg caa aag ccc aaa agt gca gat				2399
Ile Ile Pro Ser Pro Asn Val Met Ser Gln Lys Pro Lys Ser Ala Asp				
	710	715	720	
cct act ctc ggc cca gaa cga gcc atg tcc cct gtc acg att act act				2447
Pro Thr Leu Gly Pro Glu Arg Ala Met Ser Pro Val Thr Ile Thr Thr				
	725	730	735	
att tcc aga gag aag agc ccg gaa ggt gga agg agc gcc ttt gcc gac				2495
Ile Ser Arg Glu Lys Ser Pro Glu Gly Gly Arg Ser Ala Phe Ala Asp				
	740	745	750	
agg cct gca tcc ccc atc caa atc atg acg gtg tca aca tct gca gct				2543
Arg Pro Ala Ser Pro Ile Gln Ile Met Thr Val Ser Thr Ser Ala Ala				
	755	760	765	
ccc act gaa atc gct gtc tct cct gaa tct cag gaa gtg cct atg gga				2591
Pro Thr Glu Ile Ala Val Ser Pro Glu Ser Gln Glu Val Pro Met Gly				
	770	775	780	785
agg act atc ctc aaa gtc acc ccg gaa aaa caa act gtt cca gcc ccc				2639
Arg Thr Ile Leu Lys Val Thr Pro Glu Lys Gln Thr Val Pro Ala Pro				
	790	795	800	
gtg cgg aag tac aac tcc aat gct aat atc atc acc acg gaa gac aat				2687
Val Arg Lys Tyr Asn Ser Asn Ala Asn Ile Ile Thr Thr Glu Asp Asn				
	805	810	815	
aaa att cac att cac ctg ggt tct cag ttt aag cga tct cct ggg cct				2735
Lys Ile His Ile His Leu Gly Ser Gln Phe Lys Arg Ser Pro Gly Pro				
	820	825	830	
gcc gct gaa ggc gtg agc cca gtt atc acc gtc cgg cct gtc aac gtg				2783
Ala Ala Glu Gly Val Ser Pro Val Ile Thr Val Arg Pro Val Asn Val				
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aca gcg gag aag gag gtt tct aca ggc aca gtc ctt cgc tct ccc agg				2831
Thr Ala Glu Lys Glu Val Ser Thr Gly Thr Val Leu Arg Ser Pro Arg				
	850	855	860	865
aac cac ctc tct tca aga ccc ggt gct agc aaa gtg acc agc act ata				2879
Asn His Leu Ser Ser Arg Pro Gly Ala Ser Lys Val Thr Ser Thr Ile				

870	875	880	
act ata acc ccg gtc aca acg tca tcc aca cga gga acc caa tca gtg			2927
Thr Ile Thr Pro Val Thr Thr Ser Ser Thr Arg Gly Thr Gln Ser Val			
885	890	895	
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Ser Gly Gln Asp Gly Ser Ser Gln Arg Pro Thr Pro Thr Arg Ile Pro			
900	905	910	
atg tca aaa ggt atg aaa gct gga aag cca gta gtg gca gcc tca gga			3023
Met Ser Lys Gly Met Lys Ala Gly Lys Pro Val Val Ala Ala Ser Gly			
915	920	925	
gca gga aat ctg acc aaa ttc cag cct cga gct gag act cag tct atg			3071
Ala Gly Asn Leu Thr Lys Phe Gln Pro Arg Ala Glu Thr Gln Ser Met			
930	935	940	945
aaa ata gag ctg aag aaa tct gca gcc agc agc act gcc tct ctt gga			3119
Lys Ile Glu Leu Lys Lys Ser Ala Ala Ser Ser Thr Ala Ser Leu Gly			
950	955	960	
ggg ggg aag ggc tgagggcagt ggctaagggg gtatgttgta aggatgctac			3171
Gly Gly Lys Gly			
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3785

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Lys	Leu	Lys	Ala	Val	Thr	Tyr	Lys	Ser	Lys	Glu	Asp	Arg	Gln	Lys	Leu
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Leu	Lys	Leu	Glu	Val	Asp	Phe	Glu	His	Lys	Ala	Ser	Arg	Phe	Ser	Gln
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Glu	His	Glu	Glu	Met	Asn	Ala	Lys	Leu	Ala	Asn	Gln	Glu	Ser	His	Asn
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Arg	Gln	Leu	Arg	Leu	Lys	Leu	Val	Gly	Leu	Ser	Gln	Arg	Ile	Glu	Glu
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Leu	Glu	Glu	Thr	Asn	Lys	Ser	Leu	Gln	Lys	Ala	Glu	Glu	Glu	Leu	Gln
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Glu	Leu	Arg	Glu	Lys	Ile	Ala	Lys	Gly	Glu	Cys	Gly	Asn	Ser	Ser	Leu
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Met	Ala	Glu	Val	Glu	Ser	Leu	Arg	Lys	Arg	Val	Leu	Glu	Met	Glu	Gly
	130					135					140				

Lys	Asp	Glu	Glu	Ile	Thr	Lys	Thr	Glu	Ala	Gln	Cys	Arg	Glu	Leu	Lys
145					150					155					160

Lys	Lys	Leu	Gln	Glu	Glu	Glu	His	His	Ser	Lys	Glu	Leu	Arg	Leu	Glu
			165						170					175	

Val	Glu	Lys	Leu	Gln	Lys	Arg	Met	Ser	Glu	Leu	Glu	Lys	Leu	Glu	Glu	180	185	190
Ala	Phe	Ser	Arg	Ser	Lys	Ser	Glu	Cys	Thr	Gln	Leu	His	Leu	Asn	Leu	195	200	205
Glu	Lys	Glu	Lys	Asn	Leu	Thr	Lys	Asp	Leu	Leu	Asn	Glu	Leu	Glu	Val	210	215	220
Val	Lys	Ser	Arg	Val	Lys	Glu	Leu	Glu	Cys	Ser	Glu	Ser	Arg	Leu	Glu	225	230	235
Lys	Ala	Glu	Leu	Ser	Leu	Lys	Asp	Asp	Leu	Thr	Lys	Leu	Lys	Ser	Phe	245	250	255
Thr	Val	Met	Leu	Val	Asp	Glu	Arg	Lys	Asn	Met	Met	Glu	Lys	Ile	Lys	260	265	270
Gln	Glu	Glu	Arg	Lys	Val	Asp	Gly	Leu	Asn	Lys	Asn	Phe	Lys	Val	Glu	275	280	285
Gln	Gly	Lys	Val	Met	Asp	Val	Thr	Glu	Lys	Leu	Ile	Glu	Glu	Ser	Lys	290	295	300
Lys	Leu	Leu	Lys	Leu	Lys	Ser	Glu	Met	Glu	Glu	Lys	Glu	Tyr	Ser	Leu	305	310	315
Thr	Lys	Glu	Arg	Asp	Glu	Leu	Met	Gly	Lys	Leu	Arg	Ser	Glu	Glu	Glu	325	330	335
Arg	Ser	Cys	Glu	Leu	Ser	Cys	Ser	Val	Asp	Leu	Leu	Lys	Lys	Arg	Leu	340	345	350
Asp	Gly	Ile	Glu	Glu	Val	Glu	Arg	Glu	Ile	Asn	Arg	Gly	Arg	Ser	Cys	355	360	365
Lys	Gly	Ser	Glu	Phe	Thr	Cys	Pro	Glu	Asp	Asn	Lys	Ile	Arg	Glu	Leu	370	375	380
Thr	Leu	Glu	Ile	Glu	Arg	Leu	Lys	Lys	Arg	Leu	Gln	Gln	Leu	Glu	Val	385	390	395
Val	Glu	Gly	Asp	Leu	Met	Lys	Thr	Glu	Asp	Glu	Tyr	Asp	Gln	Leu	Glu	405	410	415

Gln	Lys	Phe	Arg	Thr	Glu	Gln	Asp	Lys	Ala	Asn	Phe	Leu	Ser	Gln	Gln			
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Leu	Glu	Glu	Ile	Lys	His	Gln	Met	Ala	Lys	His	Lys	Ala	Ile	Glu	Lys			
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Gly	Glu	Ala	Val	Ser	Gln	Glu	Ala	Glu	Leu	Arg	His	Arg	Phe	Arg	Leu			
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Glu	Glu	Ala	Lys	Ser	Arg	Asp	Leu	Gln	Ala	Glu	Val	Gln	Ala	Leu	Lys			
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Glu	Lys	Ile	His	Glu	Leu	Met	Asn	Lys	Glu	Asp	Gln	Leu	Ser	Gln	Leu			
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Gln	Val	Asp	Tyr	Ser	Val	Leu	Gln	Gln	Arg	Phe	Met	Glu	Glu	Glu	Thr			
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Glu	Leu	Ser	Lys	Arg	Tyr	Ser	Arg	Ala	Leu	Arg	Pro	Ser	Gly	Asn	Gly			
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Arg	Arg	Met	Val	Asp	Val	Pro	Val	Ala	Ser	Thr	Gly	Val	Gln	Thr	Glu			
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Arg	Lys	Ser	Phe	Gln	Glu	Glu	Asn	His	Ile	Met	Ser	Asn	Leu	Arg	Gln			
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Val	Gly	Leu	Lys	Lys	Pro	Met	Glu	Arg	Ser	Ser	Val	Leu	Asp	Arg	Tyr			
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Pro	Pro	Ala	Ala	Asn	Glu	Leu	Thr	Met	Arg	Lys	Ser	Trp	Ile	Pro	Trp			
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Lys	Gln	Gly	Gln	Pro	Leu	His	Ile	Arg	Val	Thr	Pro	Asp	His	Glu	Asn				
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Ser	Thr	Ala	Thr	Leu	Glu	Ile	Thr	Ser	Pro	Thr	Ser	Glu	Glu	Phe	Phe				
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690								695				700							
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705								710				715							
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740								745				750							
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Gly	Arg	Thr	Ile	Leu	Lys	Val	Thr	Pro	Glu	Lys	Gln	Thr	Val	Pro	Ala				
785								790				795							
Pro	Val	Arg	Lys	Tyr	Asn	Ser	Asn	Ala	Asn	Ile	Ile	Thr	Thr	Glu	Asp				
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Pro	Ala	Ala	Glu	Gly	Val	Ser	Pro	Val	Ile	Thr	Val	Arg	Pro	Val	Asn				
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Arg	Asn	His	Leu	Ser	Ser	Arg	Pro	Gly	Ala	Ser	Lys	Val	Thr	Ser	Thr				
865								870				875							
																880			

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Val Ser Gly Gln Asp Gly Ser Ser Gln Arg Pro Thr Pro Thr Arg Ile
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Pro Met Ser Lys Gly Met Lys Ala Gly Lys Pro Val Val Ala Ala Ser
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Gly Ala Gly Asn Leu Thr Lys Phe Gln Pro Arg Ala Glu Thr Gln Ser
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His Ile Ser Cys Pro Lys Pro Ser Ile Ile Gly Asn Ala Gly Glu Lys
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agt ctc tca gaa gat gca aaa aag aag aag aaa tca aat agg aag gag 144
Ser Leu Ser Glu Asp Ala Lys Lys Lys Lys Lys Ser Asn Arg Lys Glu
35 40 45

gat gat gtc atg gcc tca gga act gtc aaa cga cac cta aaa aca tct 192
Asp Asp Val Met Ala Ser Gly Thr Val Lys Arg His Leu Lys Thr Ser
50 55 60

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Asp Leu Ile Gln Leu Leu Ser Ile Met Glu Gly Glu Leu Gln Ala Arg	
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gaa gat gtg atc cac atg ctg aag aca gag aaa acc aag cct gag gtt	336
Glu Asp Val Ile His Met Leu Lys Thr Glu Lys Thr Lys Pro Glu Val	
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ctg gag gct cat tac ggg tct gcg gag cca gag aaa gtg ctg cgg gtc	384
Leu Glu Ala His Tyr Gly Ser Ala Glu Pro Glu Lys Val Leu Arg Val	
115 120 125	
ctg cac cga gat gcc att ctt gcc cag gag aaa tcc ata gga gaa gat	432
Leu His Arg Asp Ala Ile Leu Ala Gln Glu Lys Ser Ile Gly Glu Asp	
130 135 140	
gtc tat gag aaa ccg att tca gag ctg gac aga ctt gag gaa aaa cag	480
Val Tyr Glu Lys Pro Ile Ser Glu Leu Asp Arg Leu Glu Glu Lys Gln	
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aaa gaa acc tac cgg cgc atg cta gag cag ctg ttg ctg gcc gag aag	528
Lys Glu Thr Tyr Arg Arg Met Leu Glu Gln Leu Leu Leu Ala Glu Lys	
160 165 170	
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Cys His Arg Arg Thr Val Tyr Glu Leu Glu Asn Glu Lys His Lys His	
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Thr Asp Tyr Met Asn Lys Ser Asp Asp Phe Thr Asn Leu Leu Glu Gln	
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Glu Arg Glu Arg Leu Lys Lys Leu Leu Glu Gln Glu Lys Ala Tyr Gln	
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Ala Arg Lys Glu Lys Glu Asn Ala Lys Arg Leu Asn Lys Leu Arg Asp	
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Glu Leu Val Lys Leu Lys Ser Phe Ala Leu Met Leu Val Asp Glu Arg	
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Gln Met His Ile Glu Gln Leu Gly Leu Gln Ser Gln Lys Val Gln Asp	
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Leu Thr Gln Lys Leu Arg Glu Glu Glu Glu Lys Leu Lys Ala Ile Thr	
275 280 285	
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Ser Lys Ser Lys Glu Asp Arg Gln Lys Leu Leu Lys Leu Glu Val Asp	
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Ala Lys Leu Ala Asn Gln Glu Ser His Asn Arg Gln Leu Arg Leu Lys	
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335 340 345 350	
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385 390 395	
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Lys Thr Glu Ser Gln Cys Arg Glu Leu Arg Lys Lys Leu Gln Glu Glu	
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aga Arg	atg Met	tct Ser	gaa Glu	cta Leu 435	gag Glu	aaa Lys	ttg Leu	gaa Glu	gaa Glu 440	gca Ala	ttt Phe	agc Ser	aag Lys	agt Ser	aaa Lys 445	1344
tct Ser	gag Glu	tgc Cys	acc Thr 450	cag Gln	cta Leu	cat His	tta Leu	aat Asn 455	ctg Leu	gag Glu	aaa Lys	gaa Glu	aag Lys 460	aac Asn	tta Leu	1392
acc Thr	aaa Lys	gac Asp 465	ctg Leu	cta Leu	aat Asn	gaa Glu	ttg Leu 470	gag Glu	gtg Val	gtc Val	aag Lys	agt Ser	cga Arg	gtt Val	aaa Lys 475	1440
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gta Val	act Thr	gaa Glu 545	aaa Lys	cta Leu	att Ile	gaa Glu	gaa Glu 550	agt Ser	aag Lys	aaa Lys	ctt Leu	tta Leu 555	aaa Lys	cta Leu	aaa Lys	1680
tct Ser	gaa Glu 560	atg Met	gag Glu	gaa Glu	aaa Lys	gta Val 565	tac Tyr	aac Asn	ttg Leu	aca Thr	aga Arg	gaa Glu	aga Arg	gat Asp	gag Glu	1728
ttg Leu 575	ata Ile	ggc Gly	aaa Lys	ttg Leu	aaa Lys	agt Ser	gaa Glu	gaa Glu	gaa Glu 585	aaa Lys	tcc Ser	tct Ser	gaa Glu	tta Leu	agc Ser 590	1776

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Cys Ser Val Asp Leu Leu Lys Lys Arg Leu Asp Gly Ile Glu Glu Val	
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Glu Arg Glu Ile Thr Arg Gly Arg Ser Arg Lys Gly Ser Glu Leu Thr	
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Cys Pro Glu Asp Asn Lys Ile Lys Glu Leu Thr Leu Glu Ile Glu Arg	
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Leu Lys Lys Arg Leu Gln Gln Leu Glu Val Val Glu Gly Asp Leu Met	
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Lys Thr Glu Asp Glu Tyr Asp Gln Leu Glu Gln Lys Phe Arg Thr Glu	
655 660 665 670	
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Ser Arg Ala Leu Arg Pro Ser Val Asn Gly Arg Arg Met Val Asp Val	
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Glu Asn His Ile Met Ser Asn Leu Arg Gln Val Gly Leu Lys Lys Pro	
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850 855 860	
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880 885 890	
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Gly His Pro Gly Glu Val Val Leu Ser Pro Lys Gln Gly Gln Pro Leu	
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His Ile Arg Val Thr Pro Asp His Glu Asn Ser Thr Ala Thr Leu Glu	
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Ile Thr Ser Pro Thr Ser Glu Glu Phe Phe Ser Ser Thr Thr Val Ile	
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cct acc tta ggg aat cag aaa cca aga ata acc att att cca tca cca	2880
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Asn Val Met Pro Gln Lys Gln Lys Ser Gly Asp Thr Thr Leu Gly Pro	
960 965 970	
gaa cga gcc atg tcc cca gtc aca att act aca ttt tcc aga gag aag	2976
Glu Arg Ala Met Ser Pro Val Thr Ile Thr Thr Phe Ser Arg Glu Lys	
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Thr Pro Glu Ser Gly Arg Gly Ala Phe Ala Asp Arg Pro Thr Ser Pro	
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Ile Gln Ile Met Thr Val Ser Thr Ser Ala Ala Pro Ala Glu Ile Ala	
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Val Ser Pro Glu Ser Gln Glu Met Pro Met Gly Arg Thr Ile Leu Lys	
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Ser Asn Ala Asn Ile Ile Thr Thr Glu Asp Asn Lys Ile His Ile His	
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Val Met Ala Ser Gly Thr Val Lys Arg His Leu Lys Thr Ser Gly Glu
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Cys Glu Arg Lys Thr Lys Lys Ser Leu Glu Leu Ser Lys Glu Asp Leu
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Ile Gln Leu Leu Ser Ile Met Glu Gly Glu Leu Gln Ala Arg Glu Asp
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Val Ile His Met Leu Lys Thr Glu Lys Thr Lys Pro Glu Val Leu Glu
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Ala His Tyr Gly Ser Ala Glu Pro Glu Lys Val Leu Arg Val Leu His
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Arg Asp Ala Ile Leu Ala Gln Glu Lys Ser Ile Gly Glu Asp Val Tyr
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Thr Tyr Arg Arg Met Leu Glu Gln Leu Leu Leu Ala Glu Lys Cys His
165 170 175

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325 330 335

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Asp Leu Leu Asn Glu Leu Glu Val Val Lys Ser Arg Val Lys Glu Leu					
465		470		475	480
Glu Cys Ser Glu Ser Arg Leu Glu Lys Ala Glu Leu Ser Leu Lys Asp					
	485		490		495
Asp Leu Thr Lys Leu Lys Ser Phe Thr Val Met Leu Val Asp Glu Arg					
	500		505		510
Lys Asn Met Met Glu Lys Ile Lys Gln Glu Glu Arg Lys Val Asp Gly					
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Leu Asn Lys Asn Phe Lys Val Glu Gln Gly Lys Val Met Asp Val Thr					
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Glu Lys Leu Ile Glu Glu Ser Lys Lys Leu Leu Lys Leu Lys Ser Glu					
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Met Glu Glu Lys Val Tyr Asn Leu Thr Arg Glu Arg Asp Glu Leu Ile					
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Gly Lys Leu Lys Ser Glu Glu Glu Lys Ser Ser Glu Leu Ser Cys Ser					
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Val Asp Leu Leu Lys Lys Arg Leu Asp Gly Ile Glu Glu Val Glu Arg					
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Glu Asp Asn Lys Ile Lys Glu Leu Thr Leu Glu Ile Glu Arg Leu Lys					
625		630		635	640
Lys Arg Leu Gln Gln Leu Glu Val Val Glu Gly Asp Leu Met Lys Thr					
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Glu Asp Glu Tyr Asp Gln Leu Glu Gln Lys Phe Arg Thr Glu Gln Asp
660 665 670

Lys Ala Asn Phe Leu Ser Gln Gln Leu Glu Glu Ile Lys His Gln Ile
675 680 685

Ala Lys Asn Lys Ala Ile Glu Lys Gly Glu Val Val Ser Gln Glu Ala
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Glu Leu Arg His Arg Phe Arg Leu Glu Glu Ala Lys Ser Arg Asp Leu
705 710 715 720

Lys Ala Glu Val Gln Ala Leu Lys Glu Lys Ile His Glu Leu Met Asn
725 730 735

Lys Glu Asp Gln Leu Ser Gln Leu Gln Val Asp Tyr Ser Val Leu Gln
740 745 750

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755 760 765

Val Leu Asn Leu Thr Lys Glu Leu Glu Leu Ser Lys Arg Tyr Ser Arg
770 775 780

Ala Leu Arg Pro Ser Val Asn Gly Arg Arg Met Val Asp Val Pro Val
785 790 795 800

Thr Ser Thr Gly Val Gln Thr Asp Ala Val Ser Gly Glu Ala Ala Glu
805 810 815

Glu Glu Thr Pro Ala Val Phe Ile Arg Lys Ser Phe Gln Glu Glu Asn
820 825 830

His Ile Met Ser Asn Leu Arg Gln Val Gly Leu Lys Lys Pro Val Glu
835 840 845

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850 855 860

Met Arg Lys Ser Trp Ile Pro Trp Met Arg Lys Arg Glu Asn Gly Pro
865 870 875 880

Ser Ile Thr Gln Glu Lys Gly Pro Arg Thr Asn Ser Ser Pro Gly His
885 890 895

Pro Gly Glu Val Val Leu Ser Pro Lys Gln Gly Gln Pro Leu His Ile
900 905 910

Arg Val Thr Pro Asp His Glu Asn Ser Thr Ala Thr Leu Glu Ile Thr
915 920 925

Ser Pro Thr Ser Glu Glu Phe Phe Ser Ser Thr Thr Val Ile Pro Thr
930 935 940

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945 950 955 960

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Ala Met Ser Pro Val Thr Ile Thr Thr Phe Ser Arg Glu Lys Thr Pro
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Glu Ser Gly Arg Gly Ala Phe Ala Asp Arg Pro Thr Ser Pro Ile Gln
995 1000 1005

Ile Met Thr Val Ser Thr Ser Ala Ala Pro Ala Glu Ile Ala Val Ser
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Pro Glu Ser Gln Glu Met Pro Met Gly Arg Thr Ile Leu Lys Val Thr
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Ala Asn Ile Ile Thr Thr Glu Asp Asn Lys Ile His Ile His Leu Gly
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Ser Gln Phe Lys Arg Ser Pro Gly Thr Ser Gly Glu Gly Val Ser Pro
1075 1080 1085

Val Ile Thr Val Arg Pro Val Asn Val Thr Ala Glu Lys Glu Val Ser
1090 1095 1100

Thr Gly Thr Val Leu Arg Ser Pro Arg Asn His Leu Ser Ser Arg Pro
1105 1110 1115 1120

Gly Ala Ser Lys Val Thr Ser Thr Ile Thr Ile Thr Pro Val Thr Thr

	1125		1130		1135
Ser Ser Ala Arg Gly Thr Gln Ser Val Ser Gly Gln Asp Gly Ser Ser					
	1140		1145		1150
Gln Arg Pro Thr Pro Thr Arg Ile Pro Met Ser Lys Gly Met Lys Ala					
	1155		1160		1165
Gly Lys Pro Val Val Ala Ala Pro Gly Ala Gly Asn Leu Thr Lys Phe					
	1170		1175		1180
Glu Pro Arg Ala Glu Thr Gln Ser Met Lys Ile Glu Leu Lys Lys Ser					
1185		1190		1195	1200
Ala Ala Ser Ser Thr Thr Ser Leu Gly Gly Gly Lys Gly					
	1205		1210		